used to produce artificial infection on healthy bamboo seedlings. Typical symptoms were noticed on leaves 7 days after inoculation. Review of the literature revealed that *E. halodes* has been reported on several graminaceous hosts[1,2]. However, the present observation constitutes a new host record for *E. halodes* in India.

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INHERITANCE OF A PUCKERED LEAF MUTANT IN GROUNDNUT (*ARACHIS HYPOGAEA* L.)

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A plant with abnormal leaf characteristics was observed in groundnut variety OG 66–6–1. The plant, which was dwarf and compact, had puckered leaves (partially crinkled) with yellow stripes along the margin, with the exception of a few older leaves which had normal leaf phenotype. It had sequential flowering like the other plants in OG 66–6–1. The plant was harvested and progeny-rowed following the selection of puckered leaf plants in each generation till the phenotype was established. It was designated puckered leaf mutant (PLM). While such leaf characters may not be of any practical significance to groundnut breeders, morphological variants like this might be useful as marker traits in genetic studies.

The radiation-induced and/or naturally occurring mutants reported for leaf characters in groundnut are crinkle, curly, imperipinnate, lupins, brachytic, cup, willow, rusty, mosaic, multiple leaflets, corduray, flop, and Gujarat narrow leaf. There are also several chlorophyll-deficient mutants (xantha, chlorina, virescent, aureus, lutescens, etc.)[1–5]. However, PLM, with the above-mentioned characteristics, was not reported earlier in groundnut.

Parents and F_1, F_2 and backcross generations of the two reciprocal crosses involving normal leaf parents J 11 and MK 374 with PLM were grown in the 1984 rainy season at ICRISAT Center. Observations of leaf character were recorded for individual plants. The data were subjected to χ^2 analyses for testing the genetic ratio, after correcting for continuity following Yates[6].

The F_1 plants from both straight and reciprocal crosses of J 11 and MK 374 with PLM showed normal leaves.

The data for F_2 from these crosses were individually analysed for various F_2 ratios (table 1). A good fit to a 13:3 ratio of normal vs puckered leaves was observed in all crosses. The total and pooled χ^2 values were also nonsignificant ($P=0.01$) for a 13:3 ratio.

The BC_1 (F_1 backcrossed with PLM) showed a good fit for a 1:1 ratio of normal vs puckered leaves at 0.01 probability in all the crosses except (MK 374 × PLM) × PLM, for which the χ^2 value was significant at 0.05 probability (table 2). Similarly BC_2 (F_1 backcrossed to parent with normal leaf) produced only plants with normal leaves, except in

Table 1 *Chi-square test of various F_2 ratios of plants segregating for normal vs puckered leaves in two reciprocal crosses of groundnut*

Crosses	Leaf phenotype		χ^2			
	Normal	Puckered	3:1	13:3	15:1	9:7
J 11 × PLM	43	8	2.36	0.31	7.76**	16.33**
PLM × J 11	68	16	1.58	0.01	23.66**	20.82**
MK 374 × PLM	26	2	4.76*	1.77	0.34	15.24**
PLM × MK 374	35	5	3.30	1.03	2.66	15.86**
Total (4 d.f.)	—	—	12.00*	3.82	34.42**	68.25**
Pooled (1 d.f.)	172	31	10.24**	1.61	28.20**	66.91**
Heterogeneity (3 d.f.)	—	—	1.76	2.20	6.22	1.34

Significant at *$P=0.05$, **$P=0.01$.

Table 2 *Chi-square test for 1 : 1 and 1 : 0 ratios of normal vs puckered leaves in the BC_1 and BC_2 generations of two reciprocal crosses of groundnut*

Crosses	Leaf phenotype		χ^2
	Normal	Puckered	
Backcross 1 (1 : 1 ratio)			
(J 11 × PLM) × PLM	21	13	1.88
(PLM × J 11) × PLM	14	7	2.32
(MK 374 × PLM) × PLM	12	3	4.27*
(PLM × MK 374) × PLM	11	9	0.2
Backcross 2 (1 : 0 ratio)			
(J 11 × PLM) × J 11	16	1	1.06[a]
(PLM × J 11) × J 11	22	0	—
(MK 374 × PLM) × MK 374	10	0	—
(PLM × MK 374) × MK 374	25	1	1.04[a]

*Significant at $P = 0.05$.
[a]The χ^2 for testing 1:0 ratio was computed following $\chi^2 = m\,n$, where n is the observed frequency in a normal class and m is the total.

(J 11 × PLM) × J 11 and (PLM × MK 374) × MK 374, in each of which one plant with puckered leaves was also observed. However, the χ^2 value in both of these BC_2 crosses was nonsignificant at 0.01 probability. The occurrence of a single plant with puckered leaves in BC_2 might be due to a chance mixing of seeds while processing the material.

The segregation pattern in F_2 of the two reciprocal crosses suggests that the normal leaf phenotype in groundnut is controlled by two pairs of genes, designated Nl_1 and Nl_2. For the development of puckered leaf character, the presence of the Nl_1 gene in recessive homozygous condition and the Nl_2 gene in dominant homozygous or heterozygous condition is essential. All other combinations will have normal leaves.

The backcross segregation pattern did not give strong support to F_2 observations when pooled analyses were done for a 1:1 ratio of normal vs puckered leaves. Frequency of puckered leaf plants was lower than expected in the backcross generation.

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A SIMPLE TECHNIQUE FOR POLLEN VIABILITY TEST

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A few techniques for testing pollen viability have been reported earlier[1-4]. Of these, the method using sugar-based agar medium appears to be of wider use in the case of many plant species, including *Crotalaria juncea*[5-7]. Though growth of pollen tubes was different in different media[5-7], there is also a report[8,9] that pollen of *C. juncea* germinated well, in a very weak solution of sugar (cane sugar, 0.1 M). The present report describes a very simple test for pollen viability.

The test included four species, viz. *C. retusa* L., *C. juncea* L., *C. sericea* Retz and *C. verrucosa* L. After anthesis the pollen was collected and dusted on clean, grease-free slides. Just after dusting, one or two drops of distilled water were added to the pollen mass and the pollen was spread carefully with the blunt end of a dissecting needle. After proper labelling each processed slide was placed on match sticks in petri dishes containing a small piece of moist blotting paper. The petri dishes were kept covered to maintain humidity. A parallel set of slides with pollen in cane sugar solution (0.1 M) was also set up. Pollen from both water and cane sugar medium was examined microscopically every hour. The material was stained with a drop of glycerine–acetocarmine mixture (1:1) and covered with a cover glass before observation. Pollen germination was recorded from ten samples and tube growth from 20 pollen grains picked at random.

Pollen germination in distilled water was almost as good as that in sugar solution (0.1 M) in the case of *C. retusa*, *C. juncea* and *C. sericea*, while the *C. verrucosa* there was a significant difference (table 1). *C. juncea* pollen tube growth in distilled water was significantly less than that in sugar solution (table 2). The above observations show that while distilled water alone cannot substitute for sugar solution or other sugar-based medium with regard to pollen